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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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10/582,520

09/28/2006

Philippe Tailhades

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03/24/2010

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EXAMINER

BRYANT, MICHAEL C

ART UNIT

PAPER NUMBER

2884

NOTIFICATION DATE

DELIVERY MODE

03/24/2010

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|--------------------------------------|---|--|
| Office Action Summary | Application No. 10/582,520 | Applicant(s) TAILHADES ET AL. | |
| | Examiner CASEY BRYANT | Art Unit 2884 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/07/2009 has been entered.

Response to Arguments

2. Applicant's arguments, see pages 7-9 of the REMARKS, filed 12/07/2009, with respect to the rejection(s) of claim(s) 1-16 under 35 USC § 102(b) and 103(a) over Coron (FR 2150608) have been fully considered and, in view of the claim amendments, are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Torii et al.¹

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Regarding claims 1, 4 and 8, the empirical relationship set forth in the claims incorporates a non-feasible range. The claims recite an inequality of $x < 3-x-y$, wherein x may lie in the range of 0 to 2, and y may lie in the range of 0 to 0.5. However, when $x=2$,

¹ Torii et al. (1996). "Chemical Processing and Characterization of Spinel-Type Thermistor Powder in the Mn-Ni-Fe Oxide System." Journal of Materials Science 31: 2603-7.

Art Unit: 2884

the inequality reduces to $2 < 1-y$. In order for this relationship to be true, y *must* be a negative value. However, you cannot have a negative concentration of element. Therefore, it is not clear how all results are *real* results using this relationship.

6. Regarding claims 1, 4 and 8, the phrase "may lie in the range..." renders the claims indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. Therefore, the Applicant has failed to define the meets and bounds of their invention.

7. Claims 1, 4, and 8 recites the limitation "the same sublattice" in the last line. There is insufficient antecedent basis for this limitation in the claim.

8. Claims 1, 4, and 8 recites the limitation "the spinel structure" in the last line. There is insufficient antecedent basis for this limitation in the claim.

9. Accordingly, claims 1-17 are rejected based on dependence from already rejected claims.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the

Art Unit: 2884

applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claims 1-5, 8, 9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US Patent 5962854) in view of Torii et al.

Regarding claims 1, 4 and 8, Endo teaches an apparatus and method for bolometric detection of IR radiation comprising: converting a change in temperature from heat produced by the IR radiation into a change in resistivity of a thin layer of a sensitive material by bolometric detection, and detecting the IR by using the sensitive material. Endo teaches using a Mn-Ni-Co-oxide thermistor material, but does not teach a spinel ferrite thermistor material. Torii teaches that ferrite-based spinel thermistors of the formula $\text{Ni}_x\text{Fe}_y\text{Mn}_{3-x-y}\text{O}_4$ are known in the art (abstract, sections 1 & 3). In view of the negative temperature coefficient and stable structure of ferrite spinel thermistor taught by Torii, it would have been obvious to one of ordinary skill in the art to use in the apparatus of method of Endo at the time of the invention.

Regarding claims 2, 3 and 9, Torii teaches the metal including manganese (Mn) and nickel (Ni)(abstract).

Regarding claims 5 and 12, Endo teaches the sensor inserted in a packet (Fig. 7) including an inlet IR-transparent window **29**, the sensor comprising a IR-absorbing membrane (SiO_2) **13** for converting absorbed IR into heat, and transferring the heat to the sensitive material (Fig. 2A-B, 5A; col. 11, lines 54-63).

13. Claims 6, 7, 10, 11 and 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US Patent 5962854) in view of Torii et al. and Tu et al. (US Patent 5821598).

Regarding claim 6, 10, 13 and 14, Endo does not disclose a plurality of the sensors in the form of an array of pixels. Tu discloses an infrared detector comprising an array of

Art Unit: 2884

pixels (col. 1, lines 7-10). It would have been obvious to one of ordinary skill in the art the time of the invention to provide an array of sensor elements, as taught by Tu, in order to form an imaging plane to perform IR imaging.

Regarding claims 7, 11, 15 and 16, Endo does not disclose the array integrated with CMOS circuitry. Tu teaches a IR imaging array integrated with CMOS circuitry (col. 3, lines 10-13). In view of the ability to integrate multiple electronics (e.g. readout circuitry, ACIS, etc.) on a single chip using CMOS, it would have been obvious to one of ordinary skill in the art to use CMOS circuitry in the device of Endo.

14. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Endo (US Patent 5962854) in view of Torii et al. and Fujii (US Patent 6475604).

Regarding claim 17, Torii does not disclose the ferrite spinel thermistor film thickness between 10-500nm. Fujii teaches a ferrite spinel (Mn-Co-Ni-Fe-O) thermistor film thickness of 1100-1200nm (Table 3; col. 10, lines 32-67). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a film thickness between 10-500nm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). One would have been motivated to provide a smaller thin film within the claimed range in order to reduce the size of the thermistor component, while providing an accurate resistance value and B constant for improved sensing stability (col. 1, line 55 – col. 2, line 28).

Conclusion

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CASEY BRYANT whose telephone number is (571)270-1282. The examiner can normally be reached on Monday - Friday, 8am - 5pm, EST.

Art Unit: 2884

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Porta can be reached on (571)272-2444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/David P. Porta/
Supervisory Patent Examiner, Art
Unit 2884

Casey Bryant
Examiner